

Issues with Open Burning and Open Detonation

Terri Crosby-Vega

Environmental Engineer, EPA, Region 4

Environmental Show of the South 2016

Current Issues:

- ▶ Increased “public” awareness

E.g., Camp Minden, LA; Radford, VA; Holston, TN; Blue Grass Army Depot, KY

- ▶ Better understanding of extent of OB/OD contamination and remediation costs

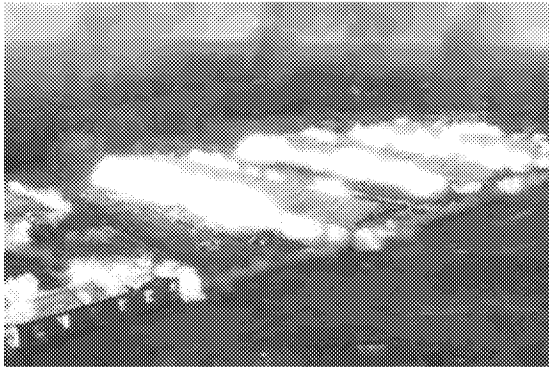
- ▶ Better understanding of alternatives to OB/OD



Camp Minden, Louisiana

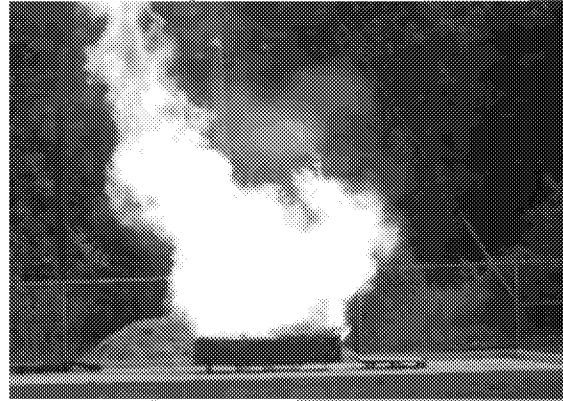


Badger Amy Base, Open Burning of Buildings



Ravenna Army Plant Burning Buildings

Typical Burn Pan
used during
open burning
activities





Midland, TX - Fireworks Disposal by Local Law Enforcement

EPA is concerned with safety and environmental impacts of all explosive and pyrotechnic wastes. Fireworks and other explosives are equally important.

Statements Heard Before

- ▶ It is the only safe way.
- ▶ It is cheapest way to treat the material.
- ▶ The land/soil/groundwater is already contaminated in this area.
- ▶ It efficiently treats the material.

40 CFR §265.382 Open Burning; Waste Explosives

Open burning of hazardous waste is prohibited except for the open burning and detonation of waste explosives. Waste explosives include waste which has the potential to detonate and bulk military propellants *which cannot safely be disposed of through other modes of treatment*. Detonation is an explosion in which chemical transformation passes through the material faster than the speed of sound...

Final Background Document Open Burning and Open Detonation (April 1980)

Only mentioned because sounds the same as previously...

Page 50- Comment Summary

1. The regulation is good, but no variances should be allowed since a public health hazard or environmental damage could ensue.
2. Open burning and open detonation should be allowed for waste ordinance or explosive wastes since:
 - a) there is no safe alternatives
 - b) alternatives are unnecessarily expensive, and
 - c) it has been done safely for years.
3. Open burning should be allowed for wastes which are hazardous solely because of ignitability.

Page 52- "The Agency will be monitoring the progress of the on-going development of safe alternatives, and may propose additional regulations at a later time."

Our current issues and concerns were outlined in the 1980 Final Background Document.

TSCA Regulations

- ▶ 40 CFR 761.50(a)(1) states, “No person may open burn PCBs. Combustion of PCBs approved under 761.60(a) or (e), or otherwise allowed under part 761, is not open burning.”

- ▶ 40 CFR 761.3 defines “open burning” to mean: “the combustion of any PCB regulated for disposal, in a manner not approved or otherwise allowed under subpart D of this part, and without any of the following: (1) Control of combustion air to maintain adequate temperature for efficient combustion. (2) Containment of the combustion reaction in an enclosed device to provide sufficient residence time and mixing for complete combustion. (3) Control of emission of the gaseous combustion products.”

This is mentioned to remind everyone that PCBs are handled through EPA. The PCB TSCA regulations cannot be delegated to State agencies. The TSCA regulations are clear on the issue of open burning.

A little more info on TSCA...

- ▶ PCB-containing paint on painted surfaces would be considered bulk-product waste and is therefore regulated for disposal when it has a PCB concentration of 50 ppm or greater. See 40 CFR 761.3 (definition of “PCB bulk product waste”).

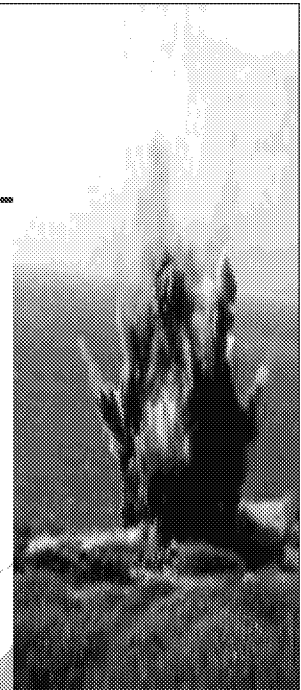
Therefore, EPA believes that combustion of PCB-containing paint on painted surfaces at 50 ppm or greater should be considered open burning and is prohibited.

If there are instances of the possibility of PCB bulk product waste, contact the EPA Regional office for direction and/or an Approval. If PCB wastes are handled in any other way that is not specifically allowed in the regulations, an Approval is required from EPA.

Explosives Disposal Alternatives Team (EDAT)
U.S. EPA Headquarters - Washington, D.C.
Office of Resource Conservation and Recovery

Mission:

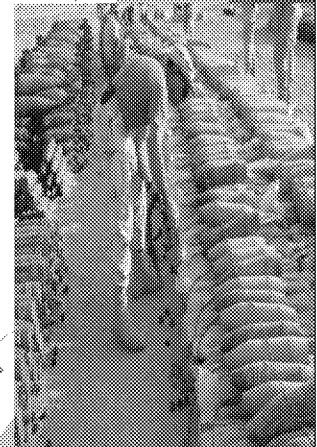
“Explore ways to better manage certain explosive wastes and reduce contamination from OB/OD operations.”



Basic Considerations for Alternatives

- ▶ Can we produce more environmentally friendly explosive materials?
- ▶ What parts of the explosive ordnances can we reuse/recycle?*
- ▶ How can we dismantle explosive ordnances?*
- ▶ How can we permanently desensitize explosive ordnances?*
- ▶ How can we finish with as close to zero waste as possible?*

*safely, effectively, efficiently, cheaply in the name of preventing a situation like the one that you can see here



Current Issues/Concerns Of OB/OD of Explosive Hazardous Wastes

- ▶ OB/OD continues to be used to destroy most explosive wastes: fireworks, flares, military munitions, auto bags, and other explosives.
- ▶ OB/OD has contributed to extensive environmental contamination and very expensive cleanups (millions to hundreds of millions of \$ per site).
- ▶ OB/OD units, which are regulated under Subpart X, are difficult to permit - over half of the remaining operating interim status facilities have OB/OD units (7 OB/OD still in interim status).

Because of past historical contamination on many sites, it's hard to determine to what extent OB/OD has contributed to current contamination levels and cleanup costs.

Public Health and Environmental Concerns

Constituents:

- ▶ Perchlorate (fireworks, flares, auto bag explosives, rocket propellant, demolition & construction)
- ▶ Other explosives: DNT, RDX, HMX, TNT, etc.
- ▶ Heavy Metals
- ▶ Dioxins

Media (on and off site):

- ▶ Air (but difficult to monitor at OB/OD sites)
- ▶ Soil
- ▶ Surface water
- ▶ Ground water

Contamination

OB/OD and Blow in Place are technologies resulting in extensive contamination:

- ▶ Air Emissions- uncontrolled emissions
- ▶ Soil contamination (Perchlorate 7,067x EPA stand.)
- ▶ Surface water contamination (TNT 20X EPA stand.)
- ▶ Ground water contamination (RDX 5,000x GWPS)
- ▶ Cleanup/remediation costs (DOE Facility \$447 million so far)

Perchlorate [15 µg/L]

Redstone Arsenal (Army/NASA) 106,000 µg/kg 7067X

Bangor Ordnance Disposal (Navy) 10,000 µg/L 5,000X

Banger Ordnance Disposal (Navy) 40 µg/L (stormwater) 20X

Lawrence Livermore Natl Lab (DOE) \$180m (Jordan) \$447m

\$626.7m (Michelle)

EDAT Undertaking:

- ▶ Alternative Technologies to OB/OD
- ▶ Universe of Energetics and Pyrotechnics
- ▶ Communication with Stakeholders
- ▶ RCRA Permitting, Policy, and Guidance

Alternative Technologies Considering

- ▶ Available

- ▶ Fluidjet Cutting
- ▶ Improved Conventional Munition (ICM) R³
- ▶ Detonation Chambers/Thermal Treatments
- ▶ Conversion to Fertilizer (base hydrolysis with humic acid)
- ▶ Bioremediation
- ▶ Chemical Reduction using Activated Hydrosulfide

- ▶ In Testing

- ▶ Nanomaterial Remediation
- ▶ Vacuum Infusion

In Closing: Reminder of the EDAT Mission

Mission:

“Explore ways to better manage certain explosive wastes and reduce contamination from OB/OD operations.”



More Information:

► Contact:

Terri Crosby-Vega
U.S. EPA Region 4
404-562-8497
Crosby-vega.terri@epa.gov

State Contacts or EPA Regional Offices

State or U.S. EPA Regional offices should join the U.S. EPA
Subpart X Workgroup. Contact me for more information.